

551.506 (73)

## WEATHER IN THE UNITED STATES

## THE WEATHER ELEMENTS

By P. C. DAY

## GENERAL SUMMARY

October, 1929, was marked by two rather unusual storm periods, the first being a continuation of the tropical storm that was central over western Florida at the end of September after an unusual course around the southern end of that State, whence it moved northeastward near the Atlantic coast during the first few days of October, attended by unusually heavy rains, high winds, and floods in its more southern course; and the other, which pursued a somewhat erratic course, reaching Georgia from the middle plains, whence it moved northward and westward to the vicinity of Lake Michigan in the early part of the last decade, as a storm of unusual violence, attended by much loss of life and damage to property on and near that and some near-by lakes.

Aside from the above, the month was mainly free from adverse weather, and it had many days favorable for the pursuit of the usual activities incident to the mid-autumn month.

## PRESSURE AND WINDS

The tropical storm previously mentioned moved sharply from western Florida to the northeastward by the morning of October 1, and thence pursued a general northeasterly course over the Atlantic Coast States, reaching New England by the morning of the 4th. A full account of this storm appears on pages 418-421 in this REVIEW. Following this storm, generally favorable conditions existed save for local precipitation, until the beginning of the second decade, when light precipitation overspread the north and central districts from the Plains States eastward to near the Great Lakes and Ohio Valley, and local precipitation occurred over the Florida Peninsula, nearly 5 inches of rain falling at Miami during the 24 hours ending 8 a. m., the 11th, and additional amounts of about 3½ inches occurred during the following two days. The rain condition over the Plains States developed a cyclonic formation by the morning of the 12th, and precipitation continued over the more eastern portion of the rain area, the general storm moving northeastward into Canada by the morning of the 13th, while rain overspread many districts from the Great Lakes and Ohio Valley eastward.

The remainder of the second decade was chiefly free from important precipitation until at the close a cyclonic condition had developed in the middle plains, and by the morning of the 21st it had moved southeastward to central Georgia, combining with a tropical disturbance that had moved from southern Florida, whence it turned sharply to the northward, developing important strength and reaching central Ohio by the following morning; thence it moved northwesterly to central Michigan and continued in that general locality until the morning of the 24th, after which it moved easterly and rapidly dissipated. This storm was attended by heavy rains and some snows throughout its northerly course and, as stated previously, attained great severity in the vicinity of Lake Michigan, attended by high winds, causing much damage to property near or on that and portions of near-by lakes. A number of vessels were wrecked due to the severe weather existing, and approximately half a hundred lives were lost.

During the last few days of the month cyclonic conditions existed over much of the country, low pressure being central on the morning of the 28th over Colorado, with more or less precipitation to the northwest and southeast of that State. During the 29th the storm center over Colorado remained mainly stationary and was augmented by another low-pressure area from the far Southwest, and precipitation continued over many of the districts where it had occurred on the previous day and extended farther eastward and northward. By the morning of the 30th the storm center had lost some energy, and a new cyclone had developed over southern Texas, and the rain area, mostly light, had extended eastward to near the Atlantic coast. On the 31st the main storm area was central in the upper Mississippi Valley, the one over southern Texas had remained nearly stationary, and precipitation had extended to nearly all parts of the country save the Southwest and far West, snow was falling in much of the northern mountain and Great Plains regions, and rainy or foggy conditions prevailed over large portions of the remaining areas to eastward and southward.

Anticyclonic conditions existed during much of the month over the far western districts, and cyclonic action was weak in the Pacific Coast States, few storms of importance originating or passing over that district during the month.

The sea-level averages of pressure were mainly above normal over the Great Plains, and thence to the far Northwest. They were below normal mainly over the eastern and southeastern districts and in interior and southern California.

Compared with September values, the mean pressure was lower from the Great Lakes and Ohio Valley eastward, and higher over other parts of the country, the increases being particularly large from the Great Plains westward.

The winds were mainly moderate, and no high velocities were recorded save in connection with the storm early in the month over the southeastern districts and that of the 22d and 23d in the vicinity of Lake Michigan.

Few tornadoes were reported and almost no deaths were caused by direct action of the winds, though about 50 lives were lost from drowning, due to stress of weather on Lake Michigan.

## TEMPERATURE

The month was moderately cool over most districts east of the Mississippi River, and warmer than normal to the westward, though the departures in both directions were unimportant. No unusually low temperatures were experienced, and killing frosts generally did not occur ahead of the usual period, and in the Mississippi Valley were not reported south of St. Louis, Mo.

By weeks, the averages of temperature were about as follows: For the first week they were, as a whole, much below normal in practically all sections from the Mississippi Valley eastward, while from the Rocky Mountains westward abnormally warm weather prevailed in general, though the week was only slightly warmer than normal over the North Pacific coast, and nearly normal warmth prevailed in the Great Plains.

The week ending October 15 continued cooler than normal over most central and northern districts, from the Mississippi River eastward, and it continued warm in the West, and was generally warmer than normal in the southern districts east of the Mississippi River, the week

averaging from 3° to 6° above normal over many of the southern plains, mountain, and plateau districts.

The week ending October 22 was warm throughout the entire country, save locally near the Atlantic coast from Florida to New England. The week was decidedly warm over most central and northern districts from the Great Plains westward, particularly so in some of the more northern sections where the positive departures ranged up to as much as 12°. The last decade of October was on the whole moderately warm from the Dakotas westward and southwestward to the Pacific coast, and also over the Northeast. The week was cooler than normal over the remaining sections, and decidedly so in the South, particularly from central Texas westward to Arizona, where the averages ranged from 6° to as much as 12° below normal.

The warmest periods of the month were mainly during the first decade in the regions from the Great Plains westward and over the Gulf and South Atlantic States, and during the second decade over the remaining portions, save in Oregon, where the warmest period was about the 21st.

Maximum temperatures were above 100° at a few points in the Southwest, the highest reported being 109° in Arizona, and they did not go higher than 80° in the more northern sections.

The lowest temperatures occurred mainly during the last decade, though in portions of the Northeastern States they occurred at the beginning of the second decade. The lowest reported, 5° below zero, occurred in the mountains of Colorado, and readings below zero were reported from a few other Mountain States. As a rule, freezing temperatures did not occur over extensive areas until the main crops had matured, but temperatures of 32° or lower were recorded at some time during the month at exposed points in all the States save Florida.

#### PRECIPITATION

The greater part of the country had precipitation in excess of the normal, this being particularly the case in the East Gulf and South Atlantic States, and in Missouri and portions of near-by areas. In North Carolina the average fall for the State was the greatest of record for October, and West Virginia had an average only slightly less than that of October, 1925, the previous highest record for October.

Some unusually heavy individual monthly amounts were reported from points in a number of States, the largest reported, 20.18 inches, occurring at Miami, Fla., where floods and overflow from near-by Lake Okeechobee practically destroyed all truck crops in that region. Precipitation in excess of 10 inches was also reported from

points in other Southern and Eastern States, where the precipitation was largely confined to two periods, that near the first of the month and that about the beginning of the third decade.

In the far West precipitation was practically everywhere less than normal and in the far Northwest, notably in portions of Washington and Oregon, the drought that had existed during preceding months was still unbroken at the end of October, some stations reporting the combined precipitation for the four months, July to October, inclusive, as the least of record for those months in the history of the stations. The springs in many portions of this region have gone dry, the water supply has become seriously reduced, and the winter feed outlook has been greatly affected.

#### SNOWFALL

The snowfall exceeded the October average amounts over extensive regions. Near and to eastward of the Mississippi River the principal snowfall came during the 22d to 24th. Considerable portions of eastern Iowa, northern Illinois, and southern Wisconsin received from 5 to 8 inches at this time. This snow reached some southern counties of the States just north of the Ohio River, and a very small portion of Kentucky. From eastern West Virginia northeastward to southern New York snowfall was practically confined to the high portions and was not heavy for the place and season. In northern New York and New England a few points had monthly amounts in excess of a foot. In the western half of the country substantially all the October snowfall came within the final five days. In the Plains States, from southeastern Nebraska southward and southwestward, only the highest portions received any snow; but northwestern Nebraska and most parts of the Dakotas had comparatively heavy falls. This was true also of most of Colorado and southern and eastern Wyoming, where a few stations measured 2 feet or slightly more. Even as far south as far-western Texas one elevated station had 8 inches.

The eastern portion of the plateau region had moderate snowfall at the higher elevations, but the western portion of this area, and the Cascade-Sierra and other far-western mountains had hardly any snowfall.

#### RELATIVE HUMIDITY

The monthly percentages of relative humidity were above the normal over large portions of the Great Plains, but elsewhere throughout the country deficiencies were the rule, these being well marked over practically all far-western districts, where deficient precipitation was the rule, and drought conditions have prevailed for several months. Here, the fire hazard has been acute and continued so at the end of the month.